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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,855	09/23/2003	Torsten Niederdrank	P03,0381 (26965-3031)	3145
26574	7590	04/24/2009	EXAMINER	
SCHIFF HARDIN, LLP PATENT DEPARTMENT 6600 SEARS TOWER CHICAGO, IL 60606-6473			LAO, LUN S	
			ART UNIT	PAPER NUMBER
			2614	
			MAIL DATE	DELIVERY MODE
			04/24/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/668,855	NIEDERDRANK ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	LUN-SEE LAO	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 15-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2009 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### *Introduction*

1 This action is in response to the REMARKS filed on 02-11-2009. Claims 1-14 have been canceled. Claims 15-26 are pending.

### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02-11-2009 has been entered.

### ***Drawings***

3. The drawings are objected to because Figures 2-6 with the hand writing and formal drawing required. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered

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and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "in figure 6 number 13" has been used to designate both feedback/oscillation detector and estimation unit. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

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5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 15-20 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williamson et al (US PAT. 5,091,952) in view of Kates et al. (US PAT. 6,219,427).

Consider claim 15, Williamson teaches a hearing device comprising:

a signal input device(see fig.6 ((300)) configured to receive an audio input signal and to convert said audio input signal into an electrical input signal;

a signal processor (302) supplied with said input electrical signal that modifies said electrical input signal, including amplifying at least a portion of said electrical input signal with a gain, dependent on a hearing impairment to be corrected, to produce a processed signal;

a signal output device(304 in fig.6) supplied with said processed signal that emits an acoustical output signal dependent thereon; said signal input device, said signal processor and said signal output device forming a feedback loop that includes an acoustic feedback path(acoustic feedback) from said signal output device to said signal input device such that said acoustic input signal is influenced by feedback via said feedback path, said feedback loop exhibiting a loop gain that changes dependent on the amplification gain provided by said signal processor;

a feedback reduction device (+, - sign, (309) in fig.6) connected between said signal input device (300) and said signal output device (304) configured to adjustably reduce,

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compensate or damp said feedback by using at least one adjustable parameter that influences said processed signal; and

an estimation unit (310, 302) connected between said signal input device (300) and said feedback reduction device(309) that estimates, from said electrical input signal, an estimated value of a system distance (distance being defined as between microphone and speaker of said feedback loop gain)(see col. 8 line 8-col.9 line 6), said estimation unit(310) supplying said estimated value to said feedback reduction device(+, - sign, (309)) and said feedback reduction device (+, - sign, (309)) being configured to generate said at least one parameter dependent on said estimated value (see col. 8 line 1-col. 9 line 36); but Williamson does not explicitly teach said system distance being defined as a distance of said loop gain to a predetermined stability limit of said feedback loop.

However, Kates teaches an estimation unit (see fig.4(402,210,206)) connected between said signal input device (202) and said feedback reduction device (+, - sign, (212)) that estimates, from said electrical input signal(202), an estimated value of a system distance (distance being defined as between microphone and speaker of said feedback loop gain), said system distance being defined as a distance of said loop gain to a predetermined stability limit of said feedback loop(see fig. 10 and col.14 line 51-col. 15 line 30), said estimation unit supplying said estimated value to said feedback reduction device and said feedback reduction device being configured to generate said at least one parameter dependent on said estimated value (see col. 11 line 42-col. 12 line 16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kate in to Williamson to provide a hearing aid for desired audio sound quality at various acoustical environment .

Consider claim 22 is essentially similar to claim 15 and is rejected for the reason state above apropos to claim 15.

Consider claim 16 Williamson teaches a hearing aid comprising a memory, accessible by said estimation unit (310 in fig.6), in which a model(308) is stored that represents a typical frequency response of a speech signal, and wherein said estimation device is configured to detect a first signal portion (302) and a second signal portion ( 310) from said electrical input signal (300) and to use said model to generate an estimated signal from said first signal portion that estimates said second signal portion, and to determine said estimated value from a difference of said estimated signal from said second signal portion detected from said electrical input signal (see col. 7 line 66-col. 8 line 68).

Consider claim 23 is essentially similar to claim 16 is rejected for the reason state above apropos to claim 16.

Consider claim 17 Williamson (fig.6) does not explicitly teach said estimation device extracts said first signal portion as a high-frequency portion of said electrical input signal and extracts said second signal portion as a low-frequency portion of said electrical input signal.

However, Williamson teaches said estimation device (see fig.2 (50)) extracts said first signal portion as a high-frequency portion(see fig.3 (60)) of said electrical input signal

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(30) and extracts said second signal portion as a low-frequency portion( 62) of said electrical input signal (30 and see col.5 line 10-68).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Williamson (fig.3) into Williamson (fig.6) to improve the gain at high frequencies while simultaneously preserving the desired tonal inputs at low frequencies.

Consider claim 24 is essentially similar to claim 17 is rejected for the reason state above apropos to claim 17.

Consider claim 18 Kates teaches a hearing aid, wherein said estimation device comprises a feature extractor (see fig.4, 210) that is configured to extract respective features from said first signal portion (such as, above threshold) and said second signal portion (such as, below the threshold) for producing said estimated signal (see fig. 21 and col. 18 line 64-col. 19 line 18).

Consider claim 25 is essentially similar to claim 18 is rejected for the reason state above apropos to claim 18.

Consider claims 19 and 20 Williamson teaches a hearing aid wherein said feedback reduction device comprises a feedback compensator (see fig.6 and see col. 8 line 8-col.9 line 6); and a hearing aid wherein said feedback reduction device comprises an amplification/compression control circuit (see fig.24 and see col. 8 line 8-col.9 line 6).

7. Claims 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williamson et al (US PAT. 5,091,952) as modified by Kates et al. (US PAT. 6,219,427)



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as applied to claims 15 and 22 above, and further in view of Nielsen et al. (US PAT. 7,106,871) .

Consider claim 21 Williamson as modified by Kates does not explicitly teach a hearing aid wherein said feedback reduction device comprises at least one oscillation detector and at least one narrow- band filter device configured to suppress oscillations, as said at least one parameter, dependent on said estimated value.

However, Nielsen teaches a hearing aid wherein said feedback reduction device comprises at least one oscillation detector (see fig.2 (49)) and at least one narrow- band filter device(8) configured to suppress oscillations, as said at least one parameter, dependent on said estimated value(see fig.2-3 and col. 6 line 15-col. 7 line 67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Nielsen into the teaching of Williamson and Kate to provide a hearing aid for feedback cancellation, which improves the result of the feedback cancellation by having fewer audible side effects and thereby gives an improved user comfort.

Consider claim 26 is essentially similar to claim 21 and is rejected for the reason state above apropos to claim 21.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 15-26 have been considered but are moot in view of the new ground(s) of rejection.

**Conclusion**

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kates et al. (US 2002/0064291) is cited to show other related the feedback compensation for hearing devices with system distance estimation.

10. Any response to this action should be mailed to:

Mail Stop \_\_\_\_ (explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

**(703) 872-9306**

Hand-delivered responses should be brought to:

Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (571) 272-7501. The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao,Lun-See  
/LUN-SEE LAO/  
Examiner, Art Unit 2614  
Patent Examiner  
US Patent and Trademark Office  
Knox  
571-272-7501  
Date: 04-20-2009

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/Vivian Chin/

Supervisory Patent Examiner, Art Unit 2614